

that the peripheral cells, irrespective of their form and thickenings, show a smaller number of plastids and oil bodies than the other cells of the leaf; that they are frequently distinguished from the flat cells by a greater capacity for taking up aqueous methylene blue and other basic anilin dyes, as well as by a greater blackening with silver nitrate; that the cells which color most strongly are in general those from which regeneration shoots develop and that the greater capacity for taking up color is not due to tannin. He concludes that the peripheral cells contain materials which are of significance for the production of adventitious shoots; that transportation of this material is very possible and consequently any cell of the leaf may thereby become capable of regeneration.—W. J. G. LAND.

The androecium of *Parnassia*.—MRS. ARBER⁴³ has made an anatomical investigation of the stamens of *Parnassia*, and has applied the results to the problem of the affinities of the genus. The vascular strands for the stamens arise at a lower level than those for the staminodia, and the two sets are independent. This seems to confirm the view that the staminodia represent an inner set of stamens. In *P. palustris* the vascular strand traversing the filament is mesarch, "and there are indications of numerous phloem groups arranged round the xylem." This is thought to mean the presence of vestigial vascular strands which indicate that each stamen of *Parnassia* is reduced from an ancestral fascicle of stamens, such as occurs in *Hypericum*. DRUDE'S view that *Parnassia* deserves to represent a family of its own, related to Saxifragaceae, Droseraceae, and Hypericaceae, is confirmed, and the view is expressed that the affinity between *Parnassia* and the Saxifragaceae "has been somewhat overestimated."—J. M. C.

The life history of *Thelygonum*.—In a study of *Thelygonum* from the germination of the seed to the mature embryo, SCHNEIDER⁴⁴ deals with gross morphological features, the development of both staminate and ovulate flowers, the reduction divisions, the development of the gametophytes, fertilization, and the development of the embryo and seed coats. In the cytological portions of the paper, it is seen that the root tips have 20 chromosomes arranged in definite pairs, the reduced number is 10, and fertilization is of the usual double character. In conclusion, the author agrees with HALLIER in placing the Thelygonaceae near the Haloragidaceae. While there is still room for complete life history studies of new or unusual plants, in most cases the time has come for intensive work on special features. In this case it looks as if it might have been worth while to look for a differentiation among chromosomes.—C. J. CHAMBERLAIN.

⁴³ ARBER, AGNES, On the structure of the androecium in *Parnassia* and its bearing on the affinities of the genus. *Ann. Botany* 27:491-510. *pl.* 34. 1913.

⁴⁴ SCHNEIDER, HANS, Morphologische und entwickelungsgeschichtliche Untersuchungen an *Thelygonum Cynocrambe* L. *Flora* 106:1-41. *figs.* 23. 1913.